UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

August 6, 2001

Mr. Terry Casey
Efficasey Environmental, LLC
14015 Park Drive, Suite 109
Tomball, Texas 77375
(281)351-9441

RE: Master Metals Inc. Superfund Site, Cleveland, Ohio

Dear Mr. Casey:

Enclosed please find a copy of the Statement of Work (SOW) for the Master Metals Superfund Site as requested per our Monday, August 6, 2001 telephone conversation. The statement of work has not changed since we redrafted it and sent you a copy back in February or March 2001. We recently sent a redrafted Administrative Order on Consent to your legal counsel and we did not attach the SOW. Please review the SOW and feel free to contact me if you have any questions or need additional information.

Sincerely,

Gwen Massenburg
Remedial Project Manager
U. S. EPA
(312) 886-0983

enclosures

cc: Susan Prout, U. S. EPA, ORC
Sheila Abraham, Ohio EPA

Statement of Work
for the Design/Construction and Clean-up
at the Master Metals Inc., Superfund Site
Cuyahoga County, Cleveland, Ohio

I. PURPOSE

The purpose of this Statement of Work (SOW) is to set forth requirements for implementation of the clean up actions set forth in the Change of Project Scope Action Memorandum, which was signed by the Superfund Division Director, U.S. EPA Region 5, September 22, 2000, for the Master Metals Superfund Site ("Site"). The Respondent must follow the Action Memorandum, the SOW, the approved Work Plans, addendum to Work Plan, the approved Clean-Up Work Plans, U.S. EPA Superfund Guidance, and any additional guidance provided by U.S. EPA in submitting deliverables for designing and implementing the clean-up activities at the site.

II. DESCRIPTION OF THE CLEAN-UP ACTIVITIES/PERFORMANCE STANDARDS

Respondent must design and implement the non-time critical removal action (NTCRA) to meet the performance standards and specifications set forth in the EE/CA, Action Memorandum, Administrative Order on Consent (AOC), and this SOW. Performance standards must include cleanup standards, standards of control, construction quality criteria and other substantive requirements, criteria or limitations including all identified Applicable or Relevant and Appropriate Requirements (ARARs) set forth in the EE/CA, Action Memorandum, AOC, and this SOW.

The Cleanup Standards required in this SOW are listed in the table below:

CLEANUP LEVELS		
Contaminant of Concern	Soil Cleanup Level	Basis for Soil Cleanup Level
Lead	1,000 mg/kg	risk-based remediation goal (RBRG)

*NOTE: The cleanup must be confirmed by a demonstration as specified in paragraph 6 of this SOW that the cleanup levels in the above table have been reached and that the levels of the above-listed contaminant remaining at the site fall below the upper bound of the 95% upper confidence limit on the mean of the measured data, evaluated as a function of the contaminant concentrations and receptor populations exposed. Refer to the *Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive: 9285.7-081, May 1992.*

The response action selected to mitigate threats associated with the Master Metals Site must consist of the following tasks:

1. Construction, Installation, and Operation of a Containment System for Remedial Action

1.1 Excavation and Treatment of Contaminated Soil

The Respondent must excavate and treat all soil that contains lead that exceeds a concentration of 1000mg/kg until the historic slag is encountered. Treatment must involve the lead stabilization process. The Respondent must perform the lead stabilization treatment process in secondary

containers. The Respondent must treat the contaminated soil to meet following performance standards: Respondent must excavate all soil that is not under the cover system[1] and that exceeds the risk goal for the site (and is not historic slag) and treat that soil to the Land Disposal Restrictions (LDR), Alternative Performance Standards, 40 C.F.R. 268.49(c)(1)(B)(C):

(c) Treatment standards for contaminated soils. Prior to land disposal, contaminated soil identified as needing to comply with LDRs must be treated according to all the standards specified in this paragraph or according to the Universal Treatment Standards (UTS) specified in 40 C.F.R. 268.48. (1) All soils. .Prior to land disposal, all constituents subject to treatment must be treated as follows: (B) For metals, treatment must achieve 90 percent reduction in constituent concentrations as measured in leachate from the treated media (tested according to the TCLP) or 90 percent reduction in total constituent concentrations (when a metal removal treatment technology is used) except as provided by paragraph (c) (1) (C) of this section. (C) When treatment of any constituent subject to treatment to a 90 percent reduction standard would result in a concentration less than 10 times the (UTS) for that constituent, treatment to achieve constituent concentration less than 10 times the UTS is not required.

After treatment, if necessary, Respondent must consolidate the soil on-site underneath the cover system. Before excavating perimeter soil, workers must clear vegetation and remove the site fence. The Respondent must replace the excavated soils with clean soil, plant the perimeter with new vegetation, and replace the fence. The Respondent should take action to ensure proper drainage to eliminate any run-off onto, or from the site. Respondent must backfill to grade all areas excavated or subgraded on-site.

1.2 Containment Cover System

The Respondent must design and construct a containment cover to eliminate the potential for exposure to lead contaminated soils on the site. The following material may be consolidated under the cover: treated material excavated from the perimeter of the site and the treated Holmden Ave soils stockpiled on site "awaiting ultimate disposal." After consolidation of the material, Respondent must cover the consolidated material with a cap constructed at a minimum with a geo-textile membrane placed between the treated material and two feet of revegetated clean fill to prevent exposure to the materials.

The Respondent must backfill to grade all areas of the site that have been excavated or are subgraded. Only the most severely deteriorated portions of the site be placed under the cover system; other areas (under the existing concrete) not covered with the cover system, must be reconditioned by sealing the cracks, followed by scarification or encapsulation of the concrete surface. Specifics on the cover system (including a cross section and designation of the areas where the treated material must be placed) must be provided in the remedial design plan submitted for approval by U. S. EPA. The Respondent must conduct routine maintenance of the cover as part of the long term requirements to be established in the Operation and Maintenance (O&M) Plan.

---

[1] This excludes the western perimeter areas excavated during the approved Phase I Time Critical Removal, where the risk goal had been achieved, or the historic slag was encountered. This excluded western portion of the site that is presently below grade needs to be re-graded with clean material and appropriately sloped to prevent potential "run-on" to the site and "run-off " from the site.

If Northern Ohio Lumber and Timber Company (NOLTCO) acquires the site, Respondent must place the consolidated treated soils underneath an asphalt cover system, engineered (with the necessary thickness and load-bearing capacity) to permit appropriate reuse. See Section V-2, Remedy Two of the Administrative Order. The Respondent must recondition the other areas (under the existing concrete) not covered with the asphalt cover system, by sealing the cracks, followed by scarification or encapsulation of the concrete surface. The Respondent must backfill to grade all areas of the site that have been excavated or are subgraded. As specified in the remedial design, treated soil, including that from Holmden Ave. awaiting "ultimate disposal" may be consolidated under the asphalt for grading purposes. A geotextile membrane must be placed between the treated soil and any clean fill used, as appropriate. Specifics on the cover system (including a cross section and designation of the areas where the treated material must be placed) must be provided in the remedial design plan submitted by the Respondent for approval by U. S. EPA.

The Respondent must dispose of excavated soil not consolidated on the site at a hazardous or solid waste disposal facility, as appropriate. Upon completion of the containment cover system, the Respondent must vegetate the cover system. Revegetation will not be required if the asphalt cover system is utilized. The Respondent must conduct routine maintenance of the cover as part of the long term requirements to be established in the Operation and Maintenance (O&M) Plan.

1.3 Excavation Locations

The Respondent must excavate all areas not under the cover system or existing concrete surface which exceeds the risk goal for the site (and is not historical slag) and treat that soil to Land Disposal Restrictions (LDR) Alternative Performance Standards, 40 C.F.R. 268.49(c)(1)(B)(C). Specific locations must be determined in the preliminary design studies. All perimeter areas should also be addressed; the extent of the perimeter areas inside and outside the current fence line is specified below.

1.3.1. The extent of the perimeter areas outside the current fence line that do not meet the risk goal for the Site[2] are as follows:

1.3.1.1. The eastern perimeter areas extend to the curb of West Third Street. The eastern perimeter areas to be excavated include sample locations "X-1 through X-9".

1.3.1.2. The southern perimeter areas extend to the curb of West Third Street. The southern area to be excavated includes sample locations "X-9 through X-13".

1.3.1.3. The western perimeter areas extend to where there is visual evidence of the divide between the manufacturing operations of the Master Metals facility and the eastern edge of the adjoining railroad spur. The western perimeter areas to be excavated include sample locations

[2]All sampling locations, grids, and analytical results referenced in Section 1.3.1 are those identified in the November 1998 Master Metals EE/CA.

"X-13 through X–19".

1.3.2. The extent of the perimeter areas inside the current fence line that do not meet the risk goal for the Site[3] are as follows:

1.3.2.1. The southern perimeter areas excavated during the Phase 1 TCR where sand/gravel was encountered (grids DD1, DD2, FF1, FF2, GG1, GG2 and HH1) need to be excavated until the risk goal for the site is achieved.[4]

1.3.2.2. The western perimeter excavated areas where the grids contained slag need not be further remediated (as the risk goal for the site was met in these areas). The excavated areas where the white sludge was encountered (grids I1, J1, and K1) may need to be addressed to achieve the risk goal for the site, as appropriate.[4]

2. Waste Streams

Other waste streams must be disposed of at an approved landfill. These waste streams include but are not limited to: personnel protective gear; soils/solids resulting from decontamination of equipment, additional investigations, and construction of response systems; and other, not yet anticipated, on- site solid waste streams.

3. Post-excavation Sampling Analysis

Respondent must conduct post-excavation sampling analysis of soils in all excavated areas for documentation of the site conditions before backfilling. A soil analysis must be documented of the soil used for backfilling to be free of contaminants.

4. Soil Clean-up Verification Reports

Soil Clean-up Verification Reports must identify the number of samples and provide the basis for the selection of sample locations, depths, and total numbers such that the site is adequately characterized, post-remediation. The verification report must include the following:

4.1. **MAPS AND CROSS SECTIONS**

Provide a scaled map of the excavation with sample grid and sample locations identified. Appropriate cross section should depict the stratigraphy, fractures, soil types, and final depth and elevations of the excavation.

---

[3]Sampling locations/grids are those identified in the October 8, 1997 letter from ENTACT requesting a modification to the Phase I Time Critical Removal (TCR) Work Plan

[4]If sand was used instead of a soil backfill in these areas, this may need to be assessed during the remedial design to ascertain if the required load bearing capacity is achieved, in the event of site re-use.

4.2. **SAMPLE LOCATION RATIONALE**

4.2.1 Rationale/basis for selection of sample location, depth, sample numbers.
4.2.2. Properly label and identify the sampling grid stations (map) including background stations.
4.2.3. Sample Depths
4.2.4. Sample Collection Procedures.
4.2.5. Results of all tests to determine clean closure.

4.3. **DATA ANALYSIS**

4.3.1. Analytical parameters
4.3.2. Analytical methods used.
4.3.3. Method detection limits
4.3.4. Laboratory Quality Assurance/Quality Control

5. STATISTICAL ANALYSES

5.1 Explanation and calculation of upper bound of 95% confidence interval.
5.2. Statistical comparison of sampling results to cleanup levels.
5.3. Lab results.

6. Additional information to support closure

The Respondent must backfill all excavated areas with clean soil to present grade, and design the backfilling with consideration for future site use, as appropriate, and prevention of soil erosion. The Respondent must provide additional information regarding residual risks as a function of the spatial correlation of sample values, for both present and future land uses.

7. Removal and Disposal of General Debris

During clean-up of the various source areas of the site, general debris and interfering structures must be removed. The Respondent must dispose the removed debris off-site.

8. Site Security

The Respondent must ensure the site is secure before, during, and after removal activities. All site security which is currently in place must be maintained. This includes replacement of the fence with an industrial grade fence topped with three strands of barb wire.

9. Monitoring and Testing Program for Removal Action

The parameter which Respondent must analyze for in the monitoring is: lead. The Respondent must implement an air monitoring program to evaluate and ensure the construction and implementation of the clean-up action complies with the approved plans, design documents, and performance standards. Air monitoring must be conducted by the Respondent just prior to commencement of the removal action and during the removal action. The Respondent must use the results of monitoring conducted just before the start of the removal action to establish the baseline (i.e., background) levels. The baseline monitoring

must be conducted on a regular basis (minimum four times daily) for a full work week (Monday through Friday) prior to initiation of excavation or demolition activities.

The Respondent must monitor fugitive air emissions from soil excavation, handling, and backfilling operations. Fugitive particulate at the property boundary locations must be monitored in accordance with the Health and Safety Plan.

The particulate concentrations at the property boundary must not exceed the following action levels without employing particulate control measures. The action level for particulate concentrations is 187.5 $\mu g/m^3$, which is one-half of the 24 hour National Ambient Air Quality Standards (NAAQS) for particulate exposure (150 $\mu g/m^3$) converted to an one-hour averaging period. The conversion factor used is 2.5 (1/0.4). However, these action levels are established to determine when mitigation measures are necessary to protect the public. Remedial activities should use the best management practices for dust suppression, regardless of the maximum allowable limit, and should include modifying work methods or utilizing engineering controls.

Respondent must use a total of four sampling stations. The air samples must be collected using the General Metal Works Model GPS-1, or sample equivalent. At a minimum, one upwind and two downwind sampling locations must be utilized. As necessary, based upon the complexity of the site removal activities and the magnitude and direction of wind related to the potential off- receptors, a third downwind sample station must be collected. Sampling locations must be established immediately inside the perimeter of the area where the excavation is taking place.

Analytical results must be made available to U. S. EPA in a preliminary form within 5 working days from the receipt of the sample by the approved laboratory.

The public in Cleveland has voiced a high level of concern over activities at this site and has requested to be notified when site cleanup activities begins. Respondent may be called upon by U.S. EPA to either conduct or assist in community relations activities at the Site. Respondent must assist U.S. EPA in community relations upon request from U.S. EPA.

10. Monitoring Well and Borehole Abandonment

Boreholes that were not completed as monitoring wells and monitoring wells that are no longer being utilized for ground water quality sampling or ground water level measurements must be abandoned properly to ensure public safety. Well/borehole abandonment must consist either of a method for well removal and simultaneous grouting of the borehole with bentonite, neat cement or a bentonite/cement mixture, or a method for routing the well in-place that ensures the complete sealing of the well. Respondent must refer to the Ohio EPA's Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring Programs, June 1993, chapter 9 for further instructions/requirements on the proper abandonment of monitoring wells for the state of Ohio.

III. SCOPE OF REMOVAL DESIGN AND REMOVAL CLEAN-UP ACTION

The Design/Clean-Up Action must consist of the following seven tasks. All plans are subject to U.S. EPA approval. Depending on the site-specific considerations and the level of detail provided when completing the initial tasks, one or more of the following tasks may be streamlined with the prior approval by U.S. EPA

Task 1: Removal Design Work Plan

Task 2: Removal Design Phases

1. Preliminary Design
2. Intermediate Design
3. Prefinal Design/Final Design

Task 3: Removal Action Work Plan

A. Work Plan - Overall Strategy
B. Quality Assurance Project Plan
C. Field Sampling Plans
D. Health and Safety Plan
E. Construction Quality Assurance Plan

Task 4: Prepare Work Plan Addendum

A. Plans and/or Maps showing extent of excavation to be conducted
B. Health and Safety Plan for Removal Action, must include air monitoring program requirement and a contingency plan
C. A proscribed truck route
D. Soil excavation and handling procedures
E. Results of all pre-removal sampling
F. QAPP modifications as necessary to address sampling and analysis conducted during and after the removal
G. Plan for Post-removal site control
H. Removal Action Schedule with Major Milestones

Task 5: Implement Clean-Up Actions/Construction

A. Pre-construction Meeting
B. Pre-final Inspection
C. Final Inspection
D. Reports
    1. Monthly Progress Reports
    2. Completion of Removal Action Report

Task 6: Operation and Maintenance

Task 7: Performance Monitoring

Task 1: Removal Design Work Plan

The Respondent must submit a Work Plan which documents the overall management strategy for performing the design, construction, operation, maintenance and monitoring of Removal Actions for U.S. EPA review and approval. The plan must document the responsibility and authority of all organizations and key personnel involved with the implementation and must include a description of qualifications of

key personnel directing the Removal Design, including contractor personnel. The Work Plan must also contain a schedule of Removal Design activities. The Respondent must submit a Removal Design Work Plan in accordance with Section V paragraph 2.1 of the AOC and Section III of this SOW.

This removal design must require pre-design studies to provide information necessary to fully implement the removal design and removal action. This Removal Design Work Plan must include, at a minimum, a pre-design QAPP, Health and Safety Plan, Field Sampling Plan, a schedule, closure of the existing ground water monitoring wells, and a survey to delineate the extent of the lead excavated area post removal associated with the eastern, western, and southern boundary of the site.

Task 2: Removal Design Phases

The Respondent must prepare construction plans and specifications to implement the Removal Actions at the Site as described in the EE/CA and this SOW. The Respondent must submit plans and specifications in accordance with the schedule set forth in Section VI below. Subject to approval by U.S. EPA, Respondent may submit more than one set of design submittals reflecting different components of the Removal Action. Respondent must develop all plans and specifications in accordance with ***U.S. EPA's Superfund Remedial Design and Remedial Action Guidance (OSWER Directive No. 9355.0-4A)***, and must demonstrate that the Remedial Action must meet all objectives of the EE/CA , the Action Memorandum, the AOC, and this SOW, including all Performance Standards. Respondent must meet regularly with U.S. EPA to discuss design issues.

2.1. Preliminary Design

Respondent must submit the Preliminary Design when the design effort is approximately 30 % complete. The Preliminary Design submittal must include or discuss, at a minimum, the following:

2.1.1. Preliminary plans, drawings, and sketches, including design calculations;
2.1.2. Results of treatability studies and additional field sampling;

2.1.3. Design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the treatment train, and expected removal or treatment efficiencies for both the process and waste (concentration and volume);

2.1.4. Proposed cleanup verification methods, including compliance with Applicable or Relevant and Appropriate Requirements (ARARs);

2.1.5. Outline of required specifications;

2.1.6. Proposed siting/locations of processes/construction activity;

2.1.7. Expected long-term monitoring and operation requirements;

2.1.8. Real estate, easement, and permit requirements;

2.1.9. Preliminary construction schedule, including contracting strategy.

2.2. Intermediate Design

Respondent must submit the Intermediate Design when the design effort is approximately 60 % complete. The Intermediate Design must fully address all comments made to the preceding design submittal. The Intermediate Design submittal must include those elements listed for the Preliminary Design, as well as the following:

2.2.1 Draft Performance Standard Verification Plan;

2.2.2. Draft Construction Quality Assurance Plan;

2.2.3. Draft Quality Assurance Performance Plan (QAPP);

2.2.4. Draft Health and Safety Plan;

2.2.5. Draft Field Sampling Plan (FSP);

2.2.6. Draft Contingency Plan

2.3. Pre-final and Final Designs

Respondent must submit the Pre-final Design when the design effort is 95% complete and must submit the Final Design when the design effort is 100% complete. The Pre-final Design must fully address all comments made to the preceding design submittal. The Final Design must fully address all comments made to the Pre-final Design and must include reproducible drawings and specifications suitable for bid advertisement. The Pre-final Design will serve as the Final Design if U.S. EPA has no further comments and issues the notice to proceed. The Pre-final and Final Design submittals must include those elements listed for the Preliminary Design, as well as, the following:

2.3.1. Final Performance Standard Verification Plan;

2.3.2. Final Construction Quality Assurance Plan;

2.3.3. Final QAPP;

2.2.4. Final H & S Plan;

2.2.5. Final FSP;

2.2.6. Final Contingency Plan;

2.2.7. Draft Operation and Maintenance Plan;

2.2.8. Capital and Operation and Maintenance Cost Estimate. This cost estimate must be refined to reflect the details presented in the Final Design;

2.2.9. Final Project Schedule for the construction and implementation of the Removal Action which identifies timing for initiation and completion of all critical path tasks. The final project schedule submitted as part of the Final Design must include specific dates for completion of the project and major milestones.

Task 3: Removal Action Work Plan

3.1. Work Plan - Overall Strategy

The Respondent must submit a Work Plan which includes a statement of the problem(s) and potential problem(s) posed by the site and how the objectives of the completed removal action must address the problem(s) as well as a detailed description of the remediation and construction activities. The removal action work plan must include a project schedule for each major activity and submission of deliverables generated during the Removal Action. The Respondent must submit a Removal Action Work Plan in accordance with Section V paragraph 1.2 of the AOC and Section III of this SOW.

3.1.1 A detailed description of the design and construction activites,

3.1.2. A detail description of operations and maintenance;

3.1.3. A detail description of performance monitoring;

3.1.3. A description of the overall management strategy;

3.1.4. The work plans must describe the types of pre-removal activities to be conducted prior to solicitation of a removal subcontractor;

3.1.5. The work plan must document the responsibility and authority of all organizations and key personnel involved with the implementation;

3.1.6. The plan must include a description of qualifications of key personnel directing the Design, and the contractor personnel;

3.1.7. The work plans must also contain a schedule of all the above activities;

3.1.8. The Work Plan must include a detailed description of the technical approach for the remediation and construction activities in accordance with the final design and the EE/CA.

3.1.9. The work plan must specify the necessary procedures, inspections, deliverables;

3.1.10. A comprehensive construction management schedule for completion of each major activity and submittal must also be included.

3.2. Quality Assurance Project Plan (QAPP)

The Respondent must develop a site specific Quality Assurance Project Plan (QAPP), covering sample analysis and data handling for samples collected in all phases of the future work, based upon the AOC and guidance provided by U.S. EPA. The QAPP must be consistent with the requirements of the EPA Contract Lab Program (CLP) for laboratories proposed outside the CLP. The QAPP must at a minimum include:

3.2.1. Project Description

3.2.1.1 Facility Location History
3.2.1.2 Past Data Collection Activity

3.2.2. Project Scope

3.2.3. Sample Network Design

3.2.4. Parameters to be Tested and Frequency

3.2.5. Project Schedule

3.2.5. Sampling Procedures

3.2.5.1. Sample Custody
- 3.2.5.1.1. Field Specific Custody Procedures
- 3.2.5.1.2. Laboratory Chain of Custody Procedures

3.2.5.2. Calibration Procedures and Frequency
- 3.2.5.2.1. Field Instruments/Equipment
- 3.2.5.2.2. Laboratory Instruments

3.2.5.3. Analytical Procedures
- 3.2.5.3.1 Non-Contract Laboratory Program

3.2.5.4. Analytical Methods
- 3.2.5.4.1. Field Screening and Analytical Protocol
- 3.2.5.4.2. Laboratory Procedures

3.2.5.5. Internal Quality Control Checks
- 3.2.5.5.1. Field Measurements
- 3.2.5.5.2. Laboratory Analysis

3.2.5.6. Data Reduction, Validation, and Reporting
- 3.2.5.6.1. Data Reduction
- 3.2.5.6.2. Data Validation
- 3.2.5.6.3.Data Reporting

3.2.5.7. Performance and System Audits
- 3.2.5.7.1. Internal Audits of Field Activity
- 3.2.5.7.2. Internal Laboratory Audit
- 3.2.5.7.3. External Field Audit
- 3.2.5.7.4. External Laboratory Audit

3.2.5.8. Preventive Maintenance
- 3.2.5.8.1. Routine Preventative Maintenance Procedures and Schedules
- 3.2.5.8.2. Field Instruments/Equipment
- 3.2.5.8.3. Laboratory Instruments

3.2.5.9. Specific Routine Procedures to Assess Data Precision, Accuracy, and Completeness

3.2.5.9.1. Field Measurement Data

3.2.5.9.2. Laboratory Data

3.2.5.10. Corrective Action

3.2.5.10.1. Sample Collection/Field Measurement

3.2.5.10.2. Laboratory Analysis

3.2.5.11. Quality Assurance Reports to Management

3.3. Field Sampling Plan

The Respondent must develop a field sampling plan in accordance with the ***Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, October 1988.*** The Field Sampling Plan should supplement the QAPP and address all sample collection activities.

3.4. Health and Safety Plan

The Respondent must develop a health and safety plan which is designed to protect on- site personnel and area residents from physical, chemical and all other hazards posed by this remedial action. The safety plan must develop the performance levels and criteria necessary to address the following areas.

3.4.1. Facility Description
3.4.2. Personnel
3.4.3. Levels of protection
3.4.4. Safe work practices and safe guards
3.4.5. Medical surveillance
3.4.6. Personal and environmental air monitoring
3.4.7. Personal protective equipment
3.4.8. Personal hygiene
3.4.9. Decontamination - personal and equipment
3.4.10. Site work zones
3.4.11. Contaminant control
3.4.12. Contingency and emergency planning
3.4.13. Logs, reports and record keeping

The safety plan must follow U.S. EPA guidance and all OSHA requirements as outlined in 29 CFR 1910 and 1926.

Contingency Plan (Stand alone or in H & S)

The Respondent must submit a Contingency Plan in accordance with 40 CFR 300.150 of the National Contingency Plan describing procedures to be used in the event of an accident or emergency at the Site. The draft Contingency Plan must be submitted with the pre-final design and the draft final Contingency Plan must be submitted with the final design. The final Contingency Plan must be submitted prior to the

start of construction, in accordance with the approved construction schedule. The Contingency Plan must include, at a minimum, the following:

3.5. Name of the person or entity responsible for responding in the event of an emergency incident.

3.6. Plan and date(s) for meeting(s) with the local community, including local, State and Federal agencies involved in the cleanup, as well as local emergency squads and hospitals.

3.7 First aid medical information.

3.8 Air Monitoring Plan.

3.9. Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), as specified in 40 CFR Part 109 describing measures to prevent and contingency plans for potential spills and discharges from materials handling and transportation.

3.10. Construction Quality Assurance Plan

Respondent must submit a Construction Quality Assurance Plan (CQAP) which describes the Site specific components of the quality assurance program which must ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The draft CQAP must be submitted with the prefinal design and the "draft" final CQAP must be submitted with the final design. The Respondent must submit the final CQAP prior to the start of construction in accordance with the approved construction schedule. The CQAP must contain, at a minimum, the following elements:

3.10.1. Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the Remedial Action.

3.10.2. Qualifications of the Quality Assurance Official to demonstrate he possesses the training and experience necessary to fulfill his identified responsibilities.

3.10.3. Protocols for sampling and testing used to monitor construction.

3.10.4. Identification of proposed quality assurance sampling activities including the sample size, locations, frequency of testing, acceptance and rejection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation. A description of the provisions for final storage of all records consistent with the requirements of the Consent Decree must be included.

3.10.5. Reporting requirements for CQA activities must be described in detail in the CQA plan. This must include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records must be presented in the CQA plan.

Task 4: Prepare Work plan Addendum

Respondent must prepare a Work plan Addendum which must consist of

4.1. Construction plans and specifications to implement the Clean-Up Actions at the Site as described in the Action Memo and this SOW such as plans and/or maps showing the extent of excavation to be conducted and the proposed locations of construction activity.

4.2. Health and Safety Plan to be utilized during the removal action including provisions for air monitoring, contingency planning, decontamination pad construction, maintenance, and procedures for trucks leaving the site.

4.3. An approved truck route.

4.4. Soil excavation and handling procedures.

4.5. Removal action schedule with major milestones identified.

4.6. The results of all conducted pre-removal sampling and analysis.

4.7. Any other submittals from the original work plan which require modification such as the QAPP must now describe sampling to be conducted during and after the removal action.

Task 5: Implement Removal Actions/Construction

Plans and specifications must be submitted in accordance with the schedule set forth below in Section V of this SOW. Subject to approval by U.S. EPA, Respondent may submit more than one set of submittals reflecting different components of the Removal Action. All plans and specifications must be developed in accordance with professional engineering practices and must demonstrate that the removal action must meet all objectives of the EE/CA, Action Memo, the AOC and this SOW, including all Performance Standards. Respondent must meet regularly with U.S. EPA as necessary to resolve any design issues. The Respondent must implement the Clean-Up Action(s) as detailed in the approved Final Removal Design. Respondent must complete the following activities in constructing the Removal Action.

5.1. Preconstruction inspection(s) and meeting(s).

The Respondent must participate with the U.S. EPA and Ohio EPA in a pre-construction inspection and meeting to:

5.1.1 Review methods for documenting and reporting inspection data;

5.1.2. Review methods for distributing and storing documents and reports;

5.1.3. Review work area security and safety protocol;

5.1.3. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed;

5.1.4. Conduct a Site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting must be documented by a designated person and minutes must be transmitted to all parties.

5.5. Pre-final inspection:

The Respondent must notify the U.S. EPA for the purposes of conducting a pre-final inspection within 30 days after Respondent makes a preliminary determination that construction is complete. The inspection is to determine whether the project is complete and consistent with the contract documents and the Removal/Clean-Up Action.

5.2. The pre-final inspection must consist of:

5.2.1. A walk-through inspection of the entire Facility affected by the clean-up with U.S. EPA and Ohio EPA.

5.2.2. Identify and note any outstanding construction items discovered during the inspection.

5.3. The pre-final inspection report must:

5.3.1. Outline the outstanding construction items and document corrective actions required to resolve the items

5.3.2. Completion date for the documented corrective actions

5.3.3. Provide a proposed date for the final inspection

5.4. Final inspection

Within 30 days after completion of any work identified in the pre-final inspection report, the Respondent must notify the U.S. EPA and Ohio EPA for the purposes of conducting a final inspection.

The final inspection must consist of a walk-through inspection of the Facility affected by the clean-up by U.S. EPA, Ohio EPA, and the Respondent.

5.4.1. Utilize the pre-final inspection report must be used as a checklist with the final inspection focusing on the outstanding construction items identified in the pre-final inspection.

5.4.2. Confirmation must be made that outstanding items have been resolved.

5.4.3. Reports

These reports must document all significant developments during the preceding period, to include:

5.4.3.1. Monthly Progress Reports.

5.4.3.2. The work performed and any problems encountered;

5.4.3.3. Waste volumes transported off-site broken down into the following categories: RCRA and solid waste;

5.4.3.4. Analytical data received during the reporting period;

5.4.3.5. Developments anticipated during the next reporting period including a schedule of work to be performed;

5.4.3.6. Anticipated problems, planned resolutions of past or anticipated problems;

5.4.3.7. Identify any changes in key personnel.

5.4.3.8. Projected work for the next reporting period;

5.4.3.9. Copies of reports, including but not limited to daily reports, field logs, inspection reports, and laboratory/monitoring data.

5.5. Completion of Removal Action Report

Within 30 days of a successful final inspection, Respondent must submit a Completion of Removal Action Report. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator must state the Removal Action has been completed in full satisfaction of the requirements of this SOW. The written report must include as-built drawings signed and stamped by a professional engineer. The report must contain the following statement, signed by a responsible corporate official of the Respondent or the Respondent' Project Coordinator:

> *"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Task 6: Operation and Maintenance

The Respondent must prepare an Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the Removal Actions. An initial Draft O&M Plan must be submitted as a final Design Document submission. The final O&M Plan must be submitted to U.S. EPA prior to the pre-final construction inspection, in accordance with the approved construction schedule. The plan must be composed of the following elements:

6.1. Description of normal operation and maintenance ;

6.1.1. Description of tasks for operation;
6.1.2. Description of tasks for maintenance;
6.1.3. Description of prescribed treatment or operation conditions;
6.1.4. Schedule showing frequency of each O&M task.

6.2. Description of potential operating problems;

6.2.1. Description and analysis of potential operation problems;
6.2.2. Sources of information regarding problems;
6.2.3. Common and/or anticipated remedies.

6.3. Description of routine monitoring and laboratory testing;

6.3.1. Description of monitoring tasks;
6.3.2. Description of required data collection, laboratory tests and their interpretation;
6.3.3. Required quality assurance, and quality control ;
6.3.4. Schedule of monitoring frequency and procedures for a petition to U.S. EPA to reduce the frequency of or discontinue monitoring;
6.3.5. Description of verification sampling procedures if Cleanup or Performance Standards are exceeded in routine monitoring.

6.4. Description of alternate O&M;

6.4.1. Should systems fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed performance standards;
6.4.2.. Analysis of vulnerability and additional resource requirement should a failure occur.

6.5. Corrective Action;

6.5.1. Description of corrective action to be implemented in the event that cleanup or performance standards are exceeded;
6.5.2. Schedule for implementing these corrective actions.

6.6. Safety plan;

6.6.1. Description of precautions, of necessary equipment, etc., for Site personnel;
6.6.2. Safety tasks required in event of systems failure.

6.7. Description of equipment; and

6.7.1. Equipment identification;
6.7.2. Installation of monitoring components;
6.7.3. Maintenance of Site equipment;
6.7.4. Replacement schedule for equipment and installed components.

6.8. Records and reporting mechanisms required.

6.8.1. Daily operating logs;
6.8.2. Laboratory records;
6.8.3. Records for operating costs;
6.8.4. Mechanism for reporting emergencies;
6.8.5. Personnel and maintenance records;
6.8.6. Monthly/annual reports to US EPA and Ohio EPA.

Task 7: Performance Monitoring

Performance monitoring must be conducted to ensure that all Performance Standards are met.

7.1. Performance Standard Verification Plan

The purpose of the Performance Standard Verification Plan is to provide a mechanism to ensure that both short-term and long-term Performance Standards for the Removal Action are met. The Draft Performance Standards Verification Plan must be submitted with the Intermediate Design. Once approved, the Performance Standards Verification Plan must be implemented on the approved schedule. The Performance Standards Verification Plan must include:

7.2. Quality Assurance Project Plan
7.3. Health and Safety Plan
7.4. Field Sampling Plan

IV. SUMMARY OF MAJOR DELIVERABLES/SCHEDULES

A summary of the project schedule and reporting requirements contained in this SOW is presented below:

	Submission	Due Date
1.	Work Plan	60 days after effective date of order
2.	Work Plan addendum	45 days after completion of pre-removal field sampling
3.	Award Clean-up Actions Contract(s)	Thirty (30) days after receipt of USEPA's approval of Work Plan Addendum
4.	Pre-Construction Inspection and Meeting	(15) days after Award of RA Contract(s)
5.	Initiate Construction of RA	15 days after Pre-Construction Inspection and meeting
6.	Pre-final Inspection	No later than 15 days after completion of construction

7.	Pre-final Inspection Report	15 days after completion of prefinal inspection
8.	Final Inspection	15 days after completion of work identified in prefinal inspection report
9.	Final O&M Plan	No later than Prefinal Inspection
10.	Construction Completion Report	30 days after final inspection
11.	Completion of Clean-up Action Report	30 days after final inspection
12.	Completion of Work Report	See Section XVII in the AOC and Task 5.5 of this SOW

Attachment 1
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the NTCRA process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. *Remedial Design/Remedial Action (RD/RA) Handbook*, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.

33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.
46. Guide to Documenting Cost and Performance for Remediation Projects, Publication EPA-542-B-95-002, March 1995.
47. Presumptive Remedies: Policy and Procedures, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9355.0-47FS, EPA 540-F-93-047, PB 93-963345, September, 1993.
48. Presumptive Remedies for Soils, Sediments, and Sludges at Wood Treater Sites, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9200.5-162, EPA/540/R-95/128, PB 95-963410, November, 1995.
49. Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9283.1-12, EPA 5401R/023, June, 1996.
50. "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA, USEPA, Office of Emergency and Remedial Response 1993, EPA/540-R-93-057"